

IN THE CLAIMS:

Please AMEND claims 27 and 29-31, as follows. For the Examiner's convenience, all the claims currently pending in this application, including those not currently being amended, have been reproduced below.

1-16. (Cancelled)

17. (Previously Presented) A scanning exposure apparatus, comprising:

a projection optical system for projecting a pattern of a reticle onto an object to be exposed, wherein the object has a region in which a pattern structure is formed;

a moving system for scanningly moving the reticle and the object relative to said projection optical system, wherein the pattern of the reticle is scanningly projected onto the object in a scanningly moving state;

surface position detecting means for detecting a surface position of the object at each of plural detection points in the region, in the scanningly moving state;

surface position adjusting means for adjusting the surface position of the object with respect to an image plane of said projection optical system, on the basis of the detection by said surface position detecting means in the projection;

control means for controlling said moving system and said surface position detecting means to perform a pre-scan measurement of the surface position of the object, prior to the projection, so as to detect an error, related to the detection through said surface position

detecting means, with respect to each of the detection points, which error is attributable to a difference in pattern structure at the detection points in the region, the detected error being used for correcting the adjustment by said surface position adjusting means in the projection; and  
initializing means for initializing said surface position detecting means in synchronism with the scan motion in the projection, at the position where said surface position detecting means has started the detection in the pre-scan measurement.

18. (Previously Presented) An apparatus according to Claim 17, wherein said surface position detecting means performs detection in accordance with a predetermined cycle, and wherein the detection points in the projection coincide with positions detected by said surface position detecting means in the pre-scan measurement, by initializing said surface position detecting means through said initializing means.

19. (Previously Presented) An apparatus according to Claim 17, wherein said surface position detecting means includes light projection means for projecting light obliquely onto the object and an accumulation type sensor for receiving reflection light from the object, and wherein said initializing means performs initialization of said surface position detecting means by resetting the accumulation start timing of said sensor.

20. (Previously Presented) A device manufacturing method, comprising the steps of:

- projecting a pattern of a reticle onto an object to be exposed, by use of a projection optical system, wherein the object has a region in which a pattern structure is formed;
- scanningly moving the reticle and the object relative to the projection optical system, wherein the pattern of the reticle is scanningly projected onto the object in a scanningly moving state;
- adjusting the surface position of the object with respect to an image plane of the projection optical system, on the basis of the surface position detection in the projection;
- performing a pre-scan measurement of the surface position of the object, prior to the projection, by use of the surface position detecting means, so as to detect an error, related to the detection through the surface position detecting means, with respect to each of the detection points, which error is attributable to a difference in pattern structure at the detection points in the region, the detected error being used for correcting the adjustment in the projection;
- initializing the surface position detecting means in synchronism with the scan motion in the projection, at a position where the surface position detecting means has started the detection in the pre-scan measurement; and
- processing the object having the reticle pattern projected thereon, so as to form a circuit pattern thereon.

21-26. (Cancelled)

27. (Currently Amended) A scanning exposure apparatus which has an optical system and exposes an object to a pattern from an original through the optical system while scanning the original and the object, said apparatus comprising:

a stage unit ~~on which an object to be exposed is placed and~~ which holds and moves the object;

a position detecting unit which detects a position of a surface of the object in a direction of an optical axis of the optical system; and

a control unit which obtains ~~offset data for offsetting detection results made by said position detecting unit based on detection results made by said position detecting unit with respect to a plurality of detection points in a region to be exposed, while a first scan of the object is made relative to said position detecting unit by said stage unit, and obtains corrected data by correcting detection results, which are made by said positing detecting unit with respect to a plurality of detection points in a region to be exposed, while a second scan of the object is made relative to said position detecting unit by said stage unit, using the offset data~~ first data, with which detection results made by said position detecting unit are offset, based on detection results made by said position detecting unit with respect to a plurality of detection point in a region of the surface while a first scan of the object is made relative to said position detecting unit by said stage unit, and obtains second data, for positioning a region of the object in the direction of the optical axis, by offsetting detection results, made by said position detecting unit, with respect to a plurality of detection points in a region of the surface while a second scan of the object is made relative to said position detecting unit by said stage unit, with the first data,

wherein a detection cycle of said position detecting unit is initialized, during both of the first and second scans, based on a same target position in each region of the object to be exposed, being scanned by said stage unit.

28. (Previously Presented) An apparatus according to Claim 27, wherein said position detecting unit includes an image sensor and the detection cycle is initialized by refreshing said image sensor.

29. (Currently Amended) A device manufacturing method comprising steps of:  
exposing an object to a pattern, ~~by use of~~ from an original using a scanning exposure apparatus as recited in Claim 27; and  
developing the exposed object.

30. (Currently Amended) A surface position detecting method applied to a scanning exposure apparatus, the apparatus having an optical system, a stage unit ~~on which an object is placed and~~ which holds and moves the object, and a position detecting unit which detects a position of a surface of the object in a direction of an optical axis of the optical system, the apparatus exposing the object to a pattern from an original through the optical system, while scanning the original and the object, said method comprising steps of:

~~obtaining offset data for offsetting detection results made by the position detecting unit based on detection results made by the position detecting unit with respect to a plurality of~~

~~detection points in a region to be exposed, while a first scan of the object is made relative to the position detecting unit by the stage unit~~ first data, with which detection results made by the position detecting unit are offset, based on detection results made by the position detecting unit with respect to a plurality of detection points in a region of the surface while a first scan of the object is made relative to the position detecting unit by the stage unit; and

~~obtaining corrected data by correcting detection results, which are made by the position detecting unit with respect to a plurality of detection points in a region to be exposed, while a second scan of the object is made relative to the position detecting unit by the stage unit, using the offset data~~ second data, for positioning a region of the object in the direction of the optical axis, by offsetting detection results, made by the position detecting unit with respect to a plurality of detection points in a region of the surface while a second scan of the object is made relative to the position detecting unit by the stage unit, with the offset data,

wherein a detection cycle of the position detecting unit is initialized, during both of the first and second scans, based on a same target position in each region of the object to be exposed, being scanned by the stage unit.

31. (Currently Amended) A method according to Claim 30, wherein the initializing position detecting unit includes an image sensor, and further comprising initializing the detection cycle by refreshing the image sensor.

32. (Previously Presented) A device manufacturing method, comprising steps of:

- detecting a position of a surface of an object by a surface position detecting method as recited in Claim 30;
- moving the object based on the position detected in said detecting step; and
- exposing the object, moved in said moving step, to a pattern.